DETAILED ACTION

Acknowledgement

1. Acknowledgement is made of applicant's amendment made on 05/23/2012. Applicant's submission filed has been entered and made of record.

Status of the Claims

2. Claims 1, 2, 6-12, and 16-20 are pending.

Response to Applicant's Arguments

3. **In response to "**In this regard, the Action holds that the term "less frequently" is not defined in the specification. Applicant respectfully disagrees. Nevertheless, this is not the point as the metes and bounds of the term are now defined in claims themselves. For example, claim 1 makes clear that an element which is newly made available is "used less frequently than the existing element(s) in the group that are already in use to print said image." (Claim 1). Support for the amendment to claim 1 can be found in Applicant's originally filed specification at, for example, p. 6, lines 31-34. Similarly, claim 11, without any current amendment, recites that "the one or more printing elements, newly included in the subset, [are used] to print for a predetermined duration at a frequency lower than that of one or more printing elements previously included in the subset .... of the printing elements in that group are used to print." (Claim 11). Thus, the metes and bounds of these claims are perfectly clear to those of skill in the art. that were already in use to print the image being printed. Thus,

"less frequently" is defined in the claim relative to how often other, specified elements are already being used**".**

The opinion of BPAI (the "board") states "we are unsure how an element can be made available for use "less frequently", i.e. less amount of time, in "a", i.e. one single, subsequent pass. In fact, we are unsure as to whether "less frequently" as used in the claims has the ordinary meaning of "less amount of time."[1] and "Similarly, the Specification is silent as to what "less frequently" means. Instead, the Specification only states that the non-serviced elements are initially being made available for use less frequently than the serviced elements (FF 2), without discussing any subsequent "pass" or what "less frequently" means. Though the Specification discloses an exemplary embodiment in which nozzle 2 is made available for use at a frequency less than that of the nozzle 1 during a *timeperiod* T2 (FF 3), the Specification is silent as to how this *time period* is related to "a" subsequent "pass" as recited in the claims or how is it available for use "less frequently" in a "pass." In fact, instead of defining what "less frequently" means, the Specification states that the "time periods" are not absolute time periods but correspond each to a respective predetermined number of dot locations traversed by the group of nozzles (FF 4)"[2].

The board does not appear to question the metes and bound of how elements newly made available to the group are related to existing elements in the group already in use. Rather, the board took issue with the plain meaning of the limitation "less frequently" in of itself. Specifically, the specification does not define what "less frequently" means and it is

[1] Board opinion, p. 5, ¶2.
[2] Board opinion, p. 6, ¶2.

unclear to the board whether "less frequently" has the ordinary meaning of "less amount of time". In another word, the board cannot ascribe a plain meaning construction of the limitation "less frequently" to any meaningful extent. Since the applicant introduced no intrinsic or extrinsic evidence[3] defining "less frequently", it is believed that the metes and bounds of the claims remained unclear.

4. **In response to "**In applying Fuse, the Action has overlooked two important things. First, Fuse is directed to a "preparatory discharge" in which nozzles are primed prior to a printing operation. Thus, Fuse states "a preferable drive frequency at the time of the preparatory discharge of ink is a drive frequency F' (kHz) lower than the drive frequency F (kHz) in the normal print drive conditions." *(Id.).* Thus, the teachings of Fuse are not directed to the claimed subject matter including, "initially commencing printing of an image using a subset of the elements in the group and, *during the course of printing said image,* increasing the number of elements available to print in the group; wherein each element newly made available to the group is initially, for a period of time, used less frequently than the existing element(s) in the group that are *already in use to print said image."* (Claim 1) (emphasis added). Additionally, the teachings of Fuse refer to clearing clogging from all the nozzles of a printhead. Fuse does not teach or suggest, that individual printing elements, "for a period of time, [are] used less frequently than the existing element(s) in the group that are already in use to print said image." (Claim 1)**".**

[3] i.e., industrial practice or other patents demonstrating how one skilled in the art would interpret "less frequently".

The foundation of examiner's rejections was based on a combination of ***Masuyama*** and ***Fuse***. ***Masuyama*** discloses in scans / passes from (N-3) to (N), only nozzles 1-4 are used for printing an image. Starting at (N+1)th scan / pass (**Col 5, Rows 58-67**), nozzles 5-7 are subjected to preliminary ejection and additional nozzles are subjected to preliminary ejection with each subsequent pass (**Col 6, Rows 1-19**). In and after (N+4)th scan, all the nozzles are used for printing the image.

Therefore, ***Masuyama*** commences printing using subset of nozzles in a printhead where nozzles 1-4 are used for printing at (N+1)th scan while additional nozzles are made increasingly available to print with each subsequent pass. In ***Masuyama***, nozzles 5-16 newly made available in the group were subject to preliminary ejections while nozzles 1-4 already in use continued printing the image. Since ***Masuyama***'s prepared nozzles for printing by subjecting said nozzles to preliminary ejections, ***Masuyama*** does not disclose, initially for a period of time, use each nozzle newly made available to a group of nozzles less frequently than existing nozzles already in use.

Fuse discloses a preparatory head drive mode to prepare nozzles to begin printing (**Col 14, Rows 35-44**) wherein nozzles are driven at a print frequency that is less than normal print frequency (**Col 15, Rows 60-63, mode (1), Col 16, Rows 53-58, mode (2), Col 17, Rows 61-64, mode (3), Col 18, Rows 32-35, mode (4) in view of Col 12, Rows 39-38, in preparatory head rive modes, drive frequency of each nozzle is lower than drive frequency of all nozzles in normal print drive conditions when all nozzles are printing**).

Under *KSR*, to determine whether there was an apparent reason to combine known elements in a way a patent claims, it will often be necessary to look to interrelated teachings of multiple patents, to the effects of demands known to the design community or present in the market place, and to the background knowledge possessed by a person having ordinary skill in the art[4]. To facilitate review, this analysis should be made explicit but it need not seek out precise teachings directed to the challenged claim's specific subject matter for a court can consider the inferences and creative steps a person of ordinary skill in the art would employ[5].

Hence, *KSR* does not require ***Fuse*** to be apposite or precisely directed to the subject matter claimed. Rather, *KSR* required ***Fuse*** to be an interrelated teaching that would inspire the inferences and creative steps a person of ordinary skill in the art would modify ***Maruyama*** with ***Fuse*** to obtain the same invention.

Masuyama recognized or suggested that preliminary ejection has two draw backs: (1) it wastes ink because said ink is not being used to reproduce actual print data (**Col 10, Rows 60-62**) and (2) it wastes time because the time for preliminary ejection could've been used for actual printing (**Col 10, Rows 63-65**). ***Fuse*** offers an effective solution. Instead of wasting ink by preliminary ejection in ***Masuyama***, print data are actually feed to the printhead so as to drive its constituent nozzles to eject ink for printing an image (**Col 15, Rows 1-12**) at said lesser frequency.

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[4] *KSR Int'l. Co. v. Teleflex Inc.,* 550 U.S. 398, 401(2007).
[5] *Id.*

One of ordinary skill in the art at the time of the invention would've recognized the obvious benefit suggested by ***Fuse*** in meeting ***Masuyama***'s deficiencies: (1) nozzles are actually driven to expel ink for forming print data and thereby conserving ink from being unnecessarily wasted in preliminary ejections and (2) instead of allocating a specific period of time for nozzles to perform preliminary ejection prior to subsequent pass of printing, nozzles that are beginning to be used can immediately start printing at a lesser frequency .

Therefore, it would've been obvious to one of ordinary at the time of the invention to modify the printhead of ***Masuyama*** to use elements or nozzles newly made available to a group of printing nozzles less frequently than existing nozzles by setting head drive frequency of nozzles newly made available to be lower than the normal print head drive frequency of existing elements whereas the motivation would've been to prepare printhead for printing with reduced ink and preparation time consumption (***Fuse*, Col 3, Rows 20-40**).

Claim Rejections - 35 USC § 112

5. 35 U.S.C. 112 reads as follows:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 2, 6-12, and 16-20 are rejected under 35 USC 112 for failure to particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The Board of Patent Appeals and Interference ("the board") premised its rejection on the basis that the specification is silent as to what "less frequently" means.

Applicant has not satisfied the board's requirement to define the scope of "less frequently". In the board's opinion, the metes and bounds of the claims cannot be determined because the specification is silent as to what "less frequently" means (**opinion, p. 6 at ¶2**). The board was further confounded by "how is it available for use "less frequently" in a "pass". In the context of the current claims, it is unclear how newly made available nozzles are available for use "less frequently" than the existing elements in a group of nozzles already in use because "less frequently" remains undefined.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-2, 6-8, 10-14, 16, and 18-20 are rejected under 35 USC 103(a) as being unpatentable over ***Maruyama et al. (US 6871934 B2)*** in view of ***Fuse. (US 5673071 A)***.

Regarding Claim 1, ***Maruyama*** discloses a method of operating a printer comprising an array of dot printing elements extending in a first direction relative to a page to be printed and which prints at least a part of the page during relative movement between the array and the page (**Col 4, Rows 45-65, a printhead comprising a plurality of nozzles moved in the main scanning direction and the paper medium being moved relative to the nozzles in the sub-scanning direction**), the array comprising a plurality of groups of elements with

redundancy among the elements of the group (**Col 5, Rows 16-35, different nozzles are used to print different dots**), the method comprising,

in respect of at least one of said groups, initially commencing printing of an image using a subset of the elements in the group (**Col 5, Rows 25-35 and Rows 58-67, printing using nozzles 1-4 while nozzles 5-16 are kept out of printing**) and, during the course of printing said image, increasing the number of elements available to print in the group (**Fig 4, and see Col 5, Rows 58 – Col 6, Row 20, in scans / passes from (N-3) to (N), only nozzles 1-4 are used for printing an image. Starting at (N+1)th scan / pass, nozzles 5-7 are subjected to preliminary ejection and additional nozzles are subjected to preliminary ejection with each subsequent pass. In and after (N+4)th scan, all the nozzles are used for printing the image**);

wherein the number of elements in the group available for print is increased as a function of the number of firing pulses sent to the elements of the group (**Col 5, Rows 1-10 in view of Col 10, Rows 25-35, see also Figs 4 and 8. A pulse P1 is applied a nozzle to eject ink from the nozzle and P2 is applied to make a nozzle available for printing. In Fig 4, nozzles with P1 applied are marked with "o" and nozzles with P2 applied are marked with "x". As one can observed from Fig 4, the number of elements in the printhead available for printing increases from pass N-3 to N+5 as more and more pulses P1 and P2 are applied to respective Nozzles 1-16. For example, in N-3, only four nozzles 1-4 are available since only four P1 pulses are applied. But in pass N+5, nozzles**

1-16 are available for printing since 16 P1 pulses are applied. This reads on the claimed limitation).

Masuyama does not teach wherein each element newly made available to the group is initially, for a period of time, used less frequently than the existing elements in the group that already in use to print said image.

Fuse discloses a method for preparing a printhead for printing (**Abstract, a preparatory head drive method**) wherein each element in a printhead newly made available for printing is initially, for a period of time, is use less frequently at a drive frequency lower than a normal print head drive frequency (**Col 12, Rows 20-38, preparatory discharge of ink is driven at a frequency that is lower than the normal drive frequency for printing**).

Fuse suggests a method for preparing nozzles initially left unused for a period of time for normal printing conditions (**Col 3, Rows 22-28**). The critical teaching of ***Fuse*** suggests to one skilled in the art that driving newly introduced nozzles at a frequency below normal print frequency (**i.e., the frequency at which nozzles that were already in use were being driven at**) to print actual print data presents superior advantage over ***Masuyama***.

Furthermore, one of ordinary skill in the art at the time of the invention, in light of ***Masuyama***'s admission that its preliminary ejection process to prepare nozzles wastes ink (**Col 10, Rows 60-62**) and it wastes time (**Col 10, Rows 63-65**), would've modify nozzles newly made available for using to be driven at a frequency that is less than the existing elements in the group already in use to print the image. Therefore, it would've been obvious

to one of ordinary skill in the art at the time of the invention to modify the printhead of ***Maruyama*** to use elements or nozzles newly made available to the group less frequently by setting head drive frequency of elements newly made available to be lower than the normal print head drive frequency of existing elements, for the duration of preparatory drive period, whereas the motivation would've been to prepare printhead for printing with reduced ink and preparation time consumption (***Fuse*, Col 3, Rows 20-40**).

Regarding Claim 2, ***Maruyama*** discloses wherein each redundant group is arranged to print a respective row of dots (**Col 5, Rows 15-35, multi-pass printing assigns a fraction of the total amount of nozzles to print a respective portion of an image or rows of dots in the direction in which the printhead is conveyed**).

Regarding Claim 6, ***Maruyama*** discloses wherein at least one element in the group is serviced prior to printing so that it is at least partially operational at the commencement of the print job, printing being commenced using the said at least one serviced element and one non-serviced element (**Col 6, Rows 1-20, preparing the nozzles identified for printing in a first pass for printing while nozzles identified for printing in a second pass is not service yet**).

Masuyama does not teach wherein the non-serviced element initially is made available for use less frequently than the said at least one serviced element.

Fuse discloses a method for preparing a non-serviced printhead for printing (**Abstract, a preparatory head drive method**) wherein prior to any printing, the non-

serviced printhead is serviced (**Col 21, Row 4 – Col 22, Row 67, service routine involves driving nozzles to eject ink on the basis of print data received, see Col 15, Rows 1-8. See for example Col 15, Rows 1-65, nozzle drive mode 1**) wherein the non-serviced element initially is made available for use less frequently than the said at least one serviced element (**Col 15, Rows 60-64 and Col 12, Rows 20-38. A fully serviced nozzle would be driven at a normal drive frequency wherein a non-service nozzle initially made available for printing at a drive frequency that is less than the normal drive frequency until the printhead is fully warmed up to a preset temperature, see Col 23, Rows 1-10. Still further, a preparatory head drive frequency is applied to nozzles being made available for printing that does not eject ink but nonetheless raise its temperature, See Col 15, Rows 14-30**).

Masuyama as modified by ***Fuse*** would modify the two passing printing technique as disclosed in Fig 4 to drive serviced nozzles that has been in use at a normal printhead drive frequency and to drive non-serviced that is made newly available at a drive frequency that is less than the normal printhead drive frequency in order to ensure the non-serviced nozzle reaches the proper temperature as taught by equation 2 of ***Fuse*** (**Col 23, Rows 1-10**) where ejection of ink would be stable.

Regarding Claim 7, ***Maruyama*** discloses prior to commencing printing, identifying portions of the array of printing elements which will be needed at least for a first pass of the array relative to the first page of the print job, and servicing printing elements according to the array portions so identified whereby one or more printing elements outside the identified

array portions are not serviced (**Col 6, Rows 1-20, identifying a subset of nozzles for a first printing pass and perform preliminary service on said nozzles only**).

Regarding Claim 10, ***Maruyama*** discloses wherein the printer is an inkjet printer and the dot printing elements are inkjet nozzles (**Col 4, Rows 45-65**).

Regarding Claim 11, ***Maruyama*** discloses an incremental printer (**Figs 1-2**) comprising a plurality of printing elements grouped into redundant groups, each group being arranged to print substantially different portions of a given page of a printjob (**Col 5, Rows 10-35, multi-pass printing where different nozzles are used to print different dots**), the incremental printer, when commencing a printjob, controlling at least one redundant group of printing elements such that only a subset of the printing elements in that group are used to print (**Col 5, Rows 30-35, keeping a subset of nozzles out of use when printing is first commenced**), the incremental printer being further arranged to subsequently increase the number of printing elements in that group which are used to print (**Fig 4, and see Col 5, Rows 58 – Col 6, Row 20**);

wherein the number of elements in the group available for print is increased as a function of the number of firing pulses sent to the elements of the group (**Col 5, Rows 1-10 in view of Col 10, Rows 25-35, see also Figs 4 and 8. A pulse P1 is applied a nozzle to eject ink from the nozzle and P2 is applied to make a nozzle available for printing. In Fig 4, nozzles with P1 applied are marked with "o" and nozzles with P2 applied are marked with "x". As one can observed from Fig 4, the number of elements in the printhead available for printing increases from pass N-3 to N+5 as more and more**

pulses P1 and P2 are applied to respective Nozzles 1-16. For example, in N-3, only four nozzles 1-4 are available since only four P1 pulses are applied. But in pass N+5, nozzles 1-16 are available for printing since 16 P1 pulses are applied. This reads on the claimed limitation).

Maruyama does not teach the printer being further arranged, when increasing the number of printing elements in subset of that group, to cause the one or more printing elements newly included in the subset to print for a predetermined duration at a frequency lower than that of one or more printing elements previously included in the subset.

Fuse discloses a method for preparing a printhead for printing (**Abstract, a preparatory head drive method**) wherein each element in a printhead newly made available for printing is initially, for a period of time, is use less frequently at a drive frequency lower than a normal print head drive frequency (**Col 12, Rows 20-38, preparatory discharge of ink is driven at a frequency that is lower than the normal drive frequency for printing**).

Fuse suggests a method for preparing nozzles initially left unused for a period of time for normal printing conditions (**Col 3, Rows 22-28**). The critical teaching of ***Fuse*** suggests to one skilled in the art that driving newly introduced nozzles at a frequency below normal print frequency (**i.e., the frequency at which nozzles that were already in use were being driven at**) to print actual print data presents superior advantage over ***Masuyama***.

Furthermore, one of ordinary skill in the art at the time of the invention, in light of ***Masuyama***'s admission that its preliminary ejection process to prepare nozzles wastes ink

(**Col 10, Rows 60-62**) and it wastes time (**Col 10, Rows 63-65**), would've modify ***Masuyama*** such that when increasing the number of printing elements in the subset of that group, to cause printing elements newly included in the subset to print at a frequency lower than that of the printing elements previously included in the subset for the duration of preparatory driving period for the newly introduced elements. The motivation would've been to prepare printhead for printing with reduced ink and preparation time consumption (***Fuse*****, Col 3, Rows 20-40**).

Regarding Claim 12, ***Maruyama*** discloses wherein each redundant group is arranged to print a row or column of image data (**Col 5, Rows 15-35, multi-pass printing assigns a fraction of the total amount of nozzles to print a respective portion of an image or rows of dots in the direction in which the printhead is conveyed. See** ***Girones*****, Col 26, Rows 31-37**).

Regarding Claim 16, ***Maruyama*** discloses wherein at least one element in that group is serviced prior to commencing the printjob (**Col 6, Rows 1-20, preparing the nozzles identified for printing in a first pass for printing while nozzles identified for printing in a second pass is not service yet**).

Regarding Claim 18, ***Maruyama*** discloses wherein the printer is an inkjet printer and the printing elements are inkjet nozzles (**Col 4, Rows 45-65**).

Regarding Claims 19-20, ***Maruyama*** does not expressly disclose a control circuit or a control program although it should be inherent that it does in order to execute all the process as disclosed.

Fuse discloses a printer control circuit adapted to control a printer to perform the method of inkjet printing and a non-transitory computer readable medium containing program instruction which, when executed by a data processing device, control a printer to perform the method of inkjet printing (**Col 5, Row 55 – Col 6, Row 8, CPU 3 implementing a program stored in ROM 6**).

Fuse discloses a method for printing that is very similar to ***Maruyama*** (***Fuse*****, Col 16, Rows 20-35, nozzle drive mode 2**). Therefore, it would've been obvious to one of ordinary skill in the art at the time of the invention to modify ***Maruyama***'s printer with the control system of ***Fuse*** in order to ensure smooth control of inkjet printing.

9. Claims 9 and 17 are rejected under 35 USC 103(a) as being unpatentable over the combined teachings of ***Maruyama et al. (US 6871934 B2)*** and ***Fuse. (US 5673071 A)*** in view of ***Audi et al. (US 6705697 B2)***.

Regarding Claims 9 and 17, the combined teachings do not disclose wherein the array of printing elements extends substantially fully across the page in the first direction.

Audi discloses incremental printer (**Fig 7**) comprising a plurality of printing elements grouped into redundant groups (**Col 3, Rows 52-65**), each group being arranged to print substantially different portions of a given page of a printjob (**Col 4, Row 60 – Col 5, Row**

5), the incremental printer being adapted, when commencing a printjob, to control at least one redundant group of printing elements such that only a subset of the printing elements in that group are used to print (**Col 5, Rows 30-35, keeping a subset of nozzles out of use when printing is first commenced**), the incremental printer being further arranged to subsequently increase the number of printing elements in that group which are used to print (**Col 7, Rows 25-40, offset or incremental printing; assign a first subset of nozzles to print a different scanline relative to a second subset of nozzles, see Col 6, Rows 34-38**);

wherein the plurality of printing elements form a page wide or a page high array or the array of printing elements extends substantially fully across the page in the first direction (**Col 3, Rows 60-65, page width nozzle array**).

It would've been obvious to one of ordinary skill in the art at the time of the invention to modify the structure of the combined teachings with the page width nozzle array configuration of ***Audi*** whereas the motivation would've been to provide "a page width printer controller that is operable to achieve collinear page width printing for use with a continuously moving recording medium that avoids at least some of the cost associated with reconfiguration of" printing raster data (***Audi*, Col 2, Rows 43-47**).

10. Claim 8 is rejected under 35 USC 103(a) as being unpatentable over the combined teachings of ***Maruyama et al. (US 6871934 B2)*** and ***Fuse. (US 5673071 A)*** in view of ***Girones et al. (US 6238112 B1)***.

The combined teachings do not disclose wherein faulty printing elements, as identified by a faulty printing element database, are excluded from being made available to the group.

Girones discloses a printer with at least one printhead comprising a plurality of nozzles (**Col 9, Rows 18-34**) with redundancy (**Col 26, Rows 31-37**) having a method of printing comprising:

performing a plurality of drop tests throughout the course of printing a single plot to determine the latest health status of the plurality of nozzles (**Col 16, Rows 20-54 and see Col 17-18, various scores and indicia indicating the health status of nozzles**);

determine, on the basis of the latest health status of the plurality of nozzles, a probability that each nozzle would work through out the course of printing (**Fig 3 and see Col 25, Rows 5-45, the value of probability changes through out the course of printing after each drop detecting test, Col 25, Rows 40-44**) ;

wherein the process of printing comprising:

commence printing with a group or subset of nozzles initially (**Col 26, Rows 30-37**);

continue printing with a subsequent subset of nozzles made newly available to the group for use in a subsequent pass of the printing (**Col 26, Rows 38-52**);

throughout said process of printing, design and otherwise update a printmask that sets the frequency of fire for each nozzle within the group on the basis of the health status of the

nozzles employed in the printing process (**Col 26, Rows 53-60 and Rows 65-67**) after each drop test (**Col 24, Rows 5-15, the process of "error hiding"**);

wherein if it is determined that any element or nozzle made newly available for subsequent pass of printing has a lower probability of working than nozzles within the current group, it is initially set to a frequency of firing that is lower than the frequency of firing of nozzles with higher probabilities of working (**Col 27, Table 7, initial printmask, Col 28, Table 9, updated printmask, and see Col 27-28, the process for designing a updated printmask, the lower frequency of firing being zero. That is, the examiner understands the act of firing an inkjet inherently implies a predetermined inkjet firing frequency that is not zero wherein restricting an inkjet from firing by a printmask implies a firing frequency of zero because zero ink was jetted during said pass**).

wherein faulty printing elements, as identified by a faulty printing element database, are excluded from being made available to the group (**Fig 11, Step 1130 and see Col 19, Rows 22-30 and see Col 17, Rows 40-45, nozzles identified as permanent defect are excluded from being service and hence from ever being assign a frequency of firing ink in any subsequent modification of printmask**).

It would've been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of the combined teachings with the hardwares and softwares to implement the drop detection test, nozzle health status determination, work probability calculations, and printmask designing as taught by ***Girones*** so as to adaptively assign workload and frequency of firing to nozzles newly introduced in a subsequent pass of

printing on the basis of its latest health status whereas the motivation would've been to provide a printer with error hiding capability that ensures minimum acceptable printing quality in the event that any printhead nozzle is determined to be in a state of failure or with a high probability of failure (***Girones*, Col 24, Rows 1-14**).

Conclusion

11. **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Richard Z. Zhu whose telephone number is 571-270-1587 or examiner's supervisor King Y. Poon whose telephone number is 571-272-7440. Examiner Richard Zhu can normally be reached on Monday through Thursday, 0630 - 1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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